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09/557,696	04/25/2000	Xiangxin Bi	N19.12-0035	8550

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EXAMINER

GORDON, BRIAN R

ART UNIT	PAPER NUMBER
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1743

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DATE MAILED: 02/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/557,696

Applicant(s)

BI ET AL.

Examiner

Brian R. Gordon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 May 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 38-68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 64-68 is/are allowed.
- 6) ☒ Claim(s) 1-7, 10, 12-14, 38-44, 53, 54, 56-61 and 63 is/are rejected.
- 7) ☒ Claim(s) 8, 9, 11, 45-52, 55 and 62 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 0/
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed November 11, 2002 have been fully considered.
2. Applicant's arguments have been fully considered but they are not persuasive.

With respect to the 103 rejection, of claim 38 applicant states that there is a misunderstanding, for certain claims do not recite a plurality of collectors. While claim 38 may not recite the use of a plurality of collectors other claims do make the recitation and therefore the rejection is meant to be applied to those claims, accordingly. As seen in the Marsh patent a single "Cyclone Collector 14" is included in the system. All of the product produced in the process is past through or collected in the container 14. The process may be used to produce different powders. As such during a batch process a first powder may be reacted and collected in the collector 14 and eventually collected in a second container. Afterwards another different powder may also be produced and collected in the same collector 14 and eventually collected in a different container than that of the second container.

As to applicants arguments as addressed to claims 38, 53, 54, and 57 being directed to "a mixture of compositions" within a single collector, although the preamble of claim 38 recites "a method for producing a mixture" there is no method step that indicates the first and second products are mixed. As recited above the Marsh process could be possibly a batch process however, it does not precluded that the different powders may be mixed together in the cyclone collector or any other secondary product collection container.

As to applicant's arguments to Marsh describing a single feed. That single feed line is coupled with other feed lines 2-4 that are capable of supplying other reactants to the reaction chamber via supply line 5.

As to applicant's arguments that state there is no motivation to combine the Marsh and Acosta references, the examiner respectfully disagrees for both references are related to supplying reactants to a container in which a reaction is performed. As recited above the Marsh device includes different supply lines 2-4 that are combined in a single line 5, However Acosta discloses a supply system in which multiple supply lines are used. The examiner asserts that there are numerous known advantages for using such a system. For example, the multiple lines allow for a greater quantity of reactants to be supplied to chamber and multiple nozzles could also produce a finer spray resulting in an ease of drying.

For reasons given above the 103 rejections of the claims 1-7, 10, 12-14, 39-44, and 61 is hereby maintained.

In view of applicant's arguments the 103 rejections of claims 64-66 and 68 are hereby withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 38, 53-54, 56-60, and 63 are rejected under 35 U.S.C. 103(a) as being obvious over Marsh et al. US 4,649,037.

Marsh et al. discloses a method in which inorganic metal oxides having high surface area and pore volume are prepared by spray drying. The process of producing metal oxide powders which comprises: (a) admixing reactants comprising an organic solvent, at least one hydrolyzable metal compound, and a sufficient amount of water to at least partially hydrolyze said hydrolyzable metal compound; (b) supplying the admixture as a plurality of droplets to a heating zone (radiating heat source) operated

under conditions of temperature and pressure below the critical temperature and pressure of the reactants but sufficient to produce a product comprising metal oxide powders, and a gas comprising organic solvent vapors; (c) separating said product from said gas; and, (d) collecting the product. Different reactants may be added to the stream admixture (solution or gel) in order to produce a product of different properties.

FIG. 1 schematically illustrates an indirect heated, closed cycle spray drying apparatus (operated by Bowen Engineering Inc., Somerville, N.J.) of the type preferably employed in producing our novel metal oxide powders. As illustrated, the gel (one form of the admixture) is supplied to a supply line 1. Compressed gas is applied via a line 2 to aid in feeding the admixture to the spray dryer. Optionally, cooling water is fed via a line 3 to cool the supply line 5 used to deliver the admixture to spray drying chamber 9, thus preventing premature vaporization of the admixture in the nozzle. Nitrogen (or some other "non-oxygen containing" gas; i.e., a gas having a maximum O₂ content less than or equal to about 0.1%, and preferably less than the lower explosion limit for the solvent) is supplied via a line 4 to the spray drying chamber 9 to function as the drying medium. In operation, the nitrogen is initially cycled through the system and thereafter continuously recycled with make-up nitrogen being supplied through the nozzle 4 as needed. The nitrogen is heated to the appropriate drying temperature in a preheater 7 (e.g., a steam heater) and is supplied (cocurrently) to the spray drying chamber 9 through a line 7 and circumferential supply opening 8. The gel is fed through the line 1 (via the compressed gas supplied through line 2) to the supply line 5 which feeds the gel through a nozzle 10. Within the spray drying chamber 9 is a rotating wheel or disk

11 which functions to atomize the gel. In spray drying chamber 9, a product comprising metal oxide powders, and vapors comprising water and organic solvent are produced from the gel. The product and vapors are pumped through outlet 12 and supply line 13 to a separator 14 (e.g., a cyclone separator) wherein the product is separated from the vapor. The product is removed from the separator via outlet 15. The vapor, containing reaction product fines is drawn off through take-off vent 16 and supplied by a line 17 through a nozzle 18 to a baghouse 19. In the baghouse 19, the product fines are collected and removed via outlet 20.

Marsh et al. does not specifically recite that the device comprises a plurality of collectors; however, it would have been obvious to one of the ordinary skill in the art to recognize that in varying the reactants of the system different collectors or containers would be necessary to collect the different products from outlet 20 of the system in order to avoid mixing the products or cross contamination.

6. Claims 1-7, 10, 12-14, 39-44, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh et al. as applied to claims 38, 53-54, and 56-57 above, and further in view of Acosta et al. US 6,254,826.

Marsh et al. does not disclose that the device used to perform the method comprises one or more movable nozzles that may comprise a plurality of reaction inlets.

Acosta teaches a multiple conduit (inlets and nozzles) substance transfer device, and substance transfer device positioning structure.

A flexible tube 428, preferably formed of a plastic material, or other suitable conduit structure, extends from the central conduit 422 of the manifold 420. Tube 428 may be connected to a containers (not shown) in which fluids can be stored.

A flexible tube 448, preferably formed of a plastic material, or other suitable conduit structure, extends from the central conduit 442 of the dispenser manifold 440 and may be connected to a container (not shown) which stores substances to be dispensed into receptacles. Substances are preferably supplied from a remote storage container to the substance transfer device 400 via tube 448 by a hand pump (not shown) calibrated to withdraw a predetermined amount of substance from the storage container for dispensing the predetermined amount into the receptacles through the dispenser manifold 440.

It would have been obvious to one of ordinary skill in the art to modify the device of Marsh by incorporating the transfer device of Acosta in order to supply the multiple reactants or substances to the drying chamber (reaction chamber) of Marsh et al. in order to avoid the cross-contamination that may occur when using a common supply device for different reactants.

Allowable Subject Matter

7. Claims 64-67 are allowed.
8. Claims 8-9, 11, 45-52, 55, and 62 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

Marsh et al. does not disclose a method for obtaining a plurality of quantities to compositions wherein the method comprises a radiation path defined by a radiation source (infrared laser) and directing optical elements wherein the reacting of the fluid reactants involves interacting radiation source with the reactants. The apparatus comprises pumps and valves that allow for the first collector to be exposed to the forces of the pump while the first particles are collected and the second collector is exposed to the forces of the pump while the second particles are collected. Marsh also fails to teach or suggest a method of obtaining a plurality of quantities of compositions in which the method comprises performing reactions under the condition in which the reaction chamber remains isolated from the ambient environment continuously from the step or reacting a first quantity of reactants through the step of reacting a second quantity of reactants.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Drewitz, Schuh, and Divall disclose liquid transfer devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is (703) 305-0399. The examiner can normally be reached on M-F, with 2nd and 4th F off.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 703-308-4037. The fax phone numbers for

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the organization where this application or proceeding is assigned are (703) 305-7719 for regular communications and (703) 305-3014 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

brg
January 24, 2003


Jill Warden
Supervisory Patent Examiner
Technology Center 1700